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ABSTRACT

The study describes the language acquisition of 20 young severely to profoundly hearing impaired children (3-5 years old). Ss were videotaped for 1 hour interacting individually with the investigator while using stimulus materials. Each of the four analysis methods (five stages of language acquisition by R. Brown, plan for language development goals by L. Bloom and M. Lahey, developmental sentence analyses by L. Lee, and phases of functional language by M. Halliday) measured at least one component of language--syntax, semantics, or use. The results showed that the Ss were acquiring language using the same semantic categories, syntactic forms, and functional uses as normally developing children but at later chronological ages. All of the analyses gave evidence for the conclusion that the hearing impaired Ss were developing a rule system consistent with patterns of normal language acquisition. Therefore, their language could best be described as delayed. (Author/CL)

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An Analysis of the Language Development of Hearing Impaired Children

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Synopsis Abstract

The problem of this study was to describe the language acquisition of young hearing impaired children. The 20 subjects were 3- to 5-year-old children with severe to profound hearing losses. They were videotaped for one hour interacting individually with the investigator while using stimulus materials. Each of the four analysis methods measured at least one component of language--syntax, semantics, or use. The results showed that the subjects were acquiring language using the same semantic categories, syntactic forms, and functional uses as normally developing children but at later chronological ages. All of the analyses gave evidence for the conclusion that the hearing impaired subjects were developing a rule system consistent with patterns of normal language acquisition. Therefore, their language could best be described as delayed.

An Analysis of the Language Development of Hearing Impaired Children

Educators of the hearing impaired have sought to understand the process of normal language acquisition, apply this knowledge to the acquisition process of the hearing impaired, and subsequently develop improved methods of teaching which incorporate this information. There has been a considerable amount of linguistic research focused on discovering and describing normal child language acquisition over the last two decades as exemplified by such authors as Bloom and Lahey (1978), Bowerman (1978), Brown (1973), Cazden (1972), deVilliers and deVilliers (1979), Halliday (1975), Lee (1974), McNeill (1966), and Menyuk (1971).

The major body of research concerned with language analyses of hearing impaired children has led to conclusions which support the description of their language as deviant. In these studies, the authors have analyzed the language of hearing impaired children in terms of syntax. There have been basically three types of studies performed in this category. In one type of study, samples of written language were analyzed (Arnold, 1978; Ivimey, 1976; VandenBerg, 1971). In the second type of study, subjects were administered a test

designed to determine their ability to comprehend and use a specific syntactic structure (Hochner, 1978; Bunch, 1979; Jones & Quigley, 1979; Quigley, Power, & Steinkamp, 1977; Scholes, Cohen, & Brumfield, 1978). In the third type of study, oral language samples were syntactically evaluated (Pressnell, 1973; Geers & Moog, 1978).

Several researchers consider that the difference in content and form used by the hearing impaired when compared to Standard English can be best explained by describing the English language of the hearing impaired as a dialect (Charrow, 1974; Collins-Ahlgren, 1974; Kretschmer, 1978).

Many research studies have concluded that the language of the hearing impaired can be best characterized as delayed. Authors of these studies have arrived at this conclusion from many types and combinations of language analyses, i.e. semantic (Green, 1974; Holmes & Green, 1974; Jarvella & Lubinsky, 1975; Tweney & Hoemann, 1973), semantic and use (Curtiss, Prutting, & Lowell, 1979; Skarakis & Prutting, 1977), semantic and syntactic (Edelstein, 1978), and syntactic (Ellenberger, Moores, & Hoffmeister, 1975; Taylor, 1969).

There are a variety of conflicting conclusions and unanswered questions regarding the language acquisition

of the hearing impaired. Because descriptions form the theoretical foundation for language curricula, it is essential to discover what it is hearing impaired children learn when they learn language. The intent of this study was to contribute toward answering this question through analyses of young hearing impaired children's language in terms of all three components--syntax, semantics, and use.

Method

The problem of this study was to describe the language acquisition of young hearing impaired children. The first objective was to base a description of their language upon analyses of syntax, semantics, and use. The second objective was to compare their language to descriptions of normal child language acquisition. The third objective was to determine whether their language could be classified as delayed or different and whether difference could be described as deviance or dialect. A secondary objective was to explore the adequacy of the four methods of analysis used in the study.

The sample chosen were 20 severe to profoundly hearing impaired children between the ages of 3 and 5 who possessed no concomitant handicaps which impeded their ability to learn language. The 20 subjects came from five educational programs for the hearing impaired.

Ten subjects used an oral/aural mode of communication and ten subjects used signed English. The subjects were videotaped for one hour interacting individually with the investigator while using stimulus materials which the investigator had brought into the setting for eliciting language. The materials were a picture book of The Three Bears with written words deleted, a set of pictures developed by the Northeast Regional Media Center for the Deaf for use in eliciting language, and three types of toys--a doll house with people and furniture, a barn with people and farm animals, and a parking garage with people and cars.

Analysis and Results

The author defined language acquisition as the process of learning the relationship between objects, events, and ideas and expressing this relationship in a rule system consistent and appropriate with that of the general community. With this perspective, four methods of analysis were used: Roger Brown's (1973) five stages of language acquisition, Lois Bloom and Margaret Lahey's (1978) plan for language development goals, Laura Lee's (1974) developmental sentence analyses, and Michael Halliday's (1975) phases of functional language. Table 1 presents background data and Mean Length of Utterance in morphemes for each subject.

Insert Table 1 about here

Brown (1973) presented five stages of language development with each stage defined by the major process which characterizes it. Of the 20 subjects, 15 were operating in Stage I, 1 in Stage III, and 4 in Stage V. The results of the analysis showed that the subjects were using the semantic and grammatical categories that Brown specified in his five stages of language acquisition at levels appropriate to their Mean Length of Utterances in morphemes. The Stage I subjects used all of the Stage I two-term semantic relations except agent + object, 12 of the 14 grammatical morphemes from Stage II, all of the Stage III modalities of the simple sentence (yes-no questions, wh- questions, negatives, and imperatives), no Stage IV embeddings (object noun phrase complements, indirect or embedded wh- questions, and relative clauses), and two Stage V coordinators (such as and, but, or). The majority of their language, however, was single words and the Stage III through V language they used comprised a small percentage of their total utterances. The Stage III subject used only a few of the Stage I two-term relations, 7 of the 14 morphemes from Stage II, 3 of the 4 Stage III modalities, no

Stage IV embeddings, and one Stage V coordinator. The majority of the Stage III subject's language was three-term or more relations, he used a larger percentage of grammatical morphemes than the Stage I subjects, and the Stage III through V language he used comprised a small percentage of his total utterances. The Stage V subjects used all of the Stage II through V categories and no Stage I two-term relations.

Bloom and Lahey (1978) presented a plan of language development goals which consisted of eight phases. Within each phase is the interaction of content categories (semantics) and the forms used to code these categories (syntax). These content categories and forms are developmentally sequential. Of the 20 subjects, 2 were operating in Phase 1, 7 in Phase 2, 6 in Phase 3, 1 in Phase 5, and 4 in Phase 8. The results of the analysis showed that the subjects were coding the semantic categories into the syntactic forms specified in the plan at levels appropriate to their Mean Length of Utterances in morphemes. Table 2 shows the percent of utterances coded in Bloom and Lahey's eight phases.

Insert Table 2 about here

Developmental Sentence Scoring is a procedure developed by Lee (1974) for quantifying children's syntactic development once they are using sentences (subject and predicate). Developmental Sentence Types is a procedure for classifying the syntactic development of presentence utterances. Together, these two procedures constitute Lee's developmental sentence analysis. The results of the analysis showed that the subjects were using the grammatical forms specified by Lee at levels appropriate to their stages of development in both the Developmental Sentence Types and the Developmental Sentence Scoring. Table 3 shows the Developmental Sentence Types and Scores of the subjects grouped by chronological age in six-month intervals.

Insert Table 3 about here

Halliday (1975) developed a functional framework of language acquisition consisting of three phases of development. Phases are determined through the interaction of functions and uses. One subject was operating in Phase 1, 15 subjects in Phase 2, and 4 subjects in Phase 3. The results of the analysis showed that the subjects were using the functional categories specified by Halliday at levels appropriate

to their phases of development. When grouped by chronological age in six-month intervals, Table 4 presents their percent of utterances at each phase.

Insert Table 4 about here

The children upon whom Brown, Bloom and Lahey, Lee, and Halliday based their results were one to four years younger than the hearing impaired subjects at each stage of development. When compared to the language acquisition of these normally developing children, the hearing impaired subjects were found to be acquiring language using the same semantic categories, syntactic forms, and functional uses but at later chronological ages.

Conclusions and Implications

The description of the hearing impaired subjects' language based upon the analyses give support for the classification of their language as delayed.

The methods of analysis used in this study provided comprehensive analyses along the three components of syntax, semantics, and use. However, they were extremely time-consuming to use and there was duplication between methods. Further research is needed in developing thorough and efficient methods of analysis which could be used for evaluating all three components.

As this study demonstrated, the language development of the hearing impaired subjects was not different from that of normally developing children but rather delayed. The implication is that language curricula should parallel normal language acquisition in at least three important ways. First, curricula must incorporate all components of language. Second, hearing impaired children should be immersed in a language-rich environment. Third, they should be given the freedom to use nonadult forms.

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Table 1

Subjects' Background Data and Mean Length of Utterance in Morphemes

Subject	Male/Female	CA	Hearing Loss Left/Right	MLU	Hearing Loss Causes	Hearing Status of Parents	Age at Onset of Loss
Matthew	M	3-0	97/97	1.12	hereditary	hearing	birth
Mary	F	3-3	100/103	1.20	hereditary	hearing impaired	birth
Thomas	M	3-3	90/100	1.28	meningitis	hearing	13 months
Stephen	M	3-4	78/98	2.80	not known	hearing	birth
Joseph	M	3-7	101/108	1.65	not known	hearing	birth
Nina	F	3-7	90/110	1.10	congenital	hearing	birth
Robert	M	3-8	97/97	1.45	hereditary	hearing impaired father	birth
Christopher	M	4-1	104/99	1.49	not known	hearing	birth
Denise	F	4-1	105/90	4.28	hereditary	hearing	birth
Joshua	M	4-2	78/80	1.29	congenital	hearing	birth
Adam	M	4-2	83/83	1.87	not known	hearing	birth
Jeffrey	M	4-4	100/100	1.79	hereditary	hearing	birth
Jill	F	4-5	93/107	1.49	not known	hearing	birth
Emily	F	4-7	107/107	1.83	hereditary	hearing impaired	birth
Daniel	M	5-0	90/90	1.40	not known	hearing	birth
Julie	F	5-5	95/103	1.84	hereditary	hearing impaired	birth
Michael	M	5-6	73/73	5.19	meningitis	hearing	15 months
Leah	F	5-8	98/100	7.25	hereditary	hearing	birth
Stacey	F	5-7	107/87	1.85	not known	hearing	birth
John	M	5-9	86/82	4.92	hereditary	hearing	birth

Note. Chronological Age (CA). Hearing Loss as Pure Tone Average in Decibels. Mean Length of Utterance in Morphemes (MLU).

Table 2

Percent of Utterances Coded in Bloom and Lahey's Eight Phases

Subjects	No. of Semantic Categories Used	Phase 1	2	3	4	5	6	7	8
Phase 1	7	84%	7%	4%	-	3%	-	2%	-
Phase 2	17	58%	18%	12%	3%	7%	1%	.5%	.5%
Phase 3	15	36%	27%	15%	3%	12%	6%	-	1%
Phase 5	13	19%	19%	25%	10%	11%	14%	1%	1%
Phase 8	21	1%	4%	21%	7%	38%	18%	5%	6%

Note. Subjects were grouped into phases based upon their Mean Length of Utterances in morphemes. MLU dividing points for phases are given in Bloom and Lahey (1978). There are a total of 21 semantic categories.

Table 3

Developmental Sentence Types and Developmental Sentence Scores

	Developmental Sentence Types			Developmental Sentence Scoring	
Subjects' CA	Single Words	Two-word Combinations	Multiword Constructions	Complete Sentences	Score
3-0 to 3-5	67%	16%	8%	9%	1.1
3-6 to 3-11	60%	22%	11%	7%	1.6
4-0 to 4-5	45%	25%	11%	19%	4.5
4-6 to 4-11	47%	29%	16%	8%	0.5
5-0 to 5-5	67%	15%	9%	9%	1.6
5-6 to 5-11	18%	9%	15%	58%	6.8

Note. Chronological Age (CA).

Table 4

Percent of Utterances in Halliday's Phases

Subjects' CA	Phase 1 Functions	Phase 2 Pragmatic/Mathetic	Phase 2-3 Informative	Phase 3 Plurifunctional Uses
3-0 to 3-5	all	7%/90%	none	none
3-6 to 3-11	all	24%/55%	12%	none
4-0 to 4-5	all	19%/65%	.5%	20%
4-6 to 4-11	all	11%/66%	1%	none
5-0 to 5-5	all	20%/71%	none	none
5-6 to 5-11	all	16%/40%	37%	75%

Note. Chronological Age (CA). Phases are not mutually exclusive, i.e. an utterance can serve more than one function within more than one phase.